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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/070,501	03/07/2002	Vladimir Kliatzkin	P-2684-US	7024

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PEARL COHEN ZEDEK, LLP
10 ROCKEFELLER PLAZA
SUITE 1001
NEW YORK, NY 10020

EXAMINER	
ALEJANDRO, RAYMOND	

ART UNIT	PAPER NUMBER
1745	

DATE MAILED: 08/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/070,501	KLIATZKIN, VLADIMIR	
	Examiner	Art Unit	
	Raymond Alejandro	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 July 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *28-46* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *28-46* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 07/27/05 has been entered.

This action is in reply to the amendment in connection with the foregoing RCE. The applicant has overcome the objections, the 35 USC 112 rejection and the art rejection. Refer to the abovementioned amendment for additional details on applicant's rebuttal arguments. However, the present claims are again rejected over newly discovered art as set forth infra and for the reasons of record:

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 28-46 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. The language "electrode's volume charges" in claim 28 is unclear, thereby rendering the scope of the claim indefinite. Applicant directed the Examiner's attention to specific paragraphs in the specification supporting the amended claim language (*See the amendment accompanying*

the RCE at page 8, lines 21-23). Upon reviewing such paragraphs, it was noted that the specification discusses "the electrode's volume changes". So, applicant is required to clarify this issue.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 28, 31, 34 and 41-45 are rejected under 35 U.S.C. 102(b) as being anticipated by the WO 98/38686 document (*Note: US patent 6207316 to Pauling belongs to the same patent family of the WO'686 document, thus, for purposes of rejection and paragraph citation the examiner has used the US patent'316. The WO 98/38686 has been officially cited hereinabove as it has an earlier effective publication date for 102(b) statutory purposes*).

The present application is directed to a battery cell wherein the disclosed inventive concept comprises the specific unit configuration.

Regarding claim 28:

Pauling discloses a rechargeable battery system with a plurality of electrodes in an electrolyte space filled with electrolyte (ABSTRACT). The battery system is substantially surrounded and enclosed by an electrolyte space 3 which is filled with an electrolyte 4; the electrolyte space 3 can be constructed as a closed container (COL 7, lines 64-67). Pauling discloses that the core of the electrodes 2a and 2b is formed by an electrode support 8a or 8b

which is in each case covered by an electrochemically active coating 6a or 6b (COL 8, lines 5-10). The electrode is constructed as a substantially insoluble metal electrode of the second type (COL 8, lines 11-17). The support 8a on this electrode can be a random, electrically conductive support (COL 8, lines 11-17).

Pauling discloses the electrode 2a is surrounded by a separator arrangement 7 which completely encloses the electrode 2a (COL 8, lines 18-20). The separator arrangement comprises pored separators (COL 8, lines 20-23). The separator material can be made from polyethylene and polypropylene (COL 27-33). *It is noted Pauling uses the same separator material as instantly claimed, thus, the separator material meets the requirement of being flexible.*

Pauling discloses the separator reduces that part of the structural and/or shape change of electrode 2a during cyclic discharging and charging (COL 8, lines 24-28). The outer, second separator 7b surrounds the actual electrode 2a and is used for mechanically stabilizing the complete electrode and reducing the structural and/or shape changes, particularly, the volume increase of the electrochemically active coating 6a of the electrode 2a (COL 8, lines 24-42). *Thus, Pauling discloses the means for applying pressure on the electrode.*

Regarding claim 31:

Pauling discloses that his battery system includes Ag/Zn (COL 11, lines 30-33).

Regarding claim 34:

Pauling teaches that the electrode 2a is surrounded by a separator arrangement 7 which completely encloses the electrode 2a (COL 8, lines 18-20). The separator arrangement comprises pored separators (COL 8, lines 20-23). Pauling discloses the separator reduces that part of the structural and/or shape change of electrode 2a during cyclic discharging and charging (COL 8,

lines 24-28). The outer, second separator 7b surrounds the actual electrode 2a and is used for mechanically stabilizing the complete electrode and reducing the structural and/or shape changes, particularly, the volume increase of the electrochemically active coating 6a of the electrode 2a (COL 8, lines 24-42). *Thus, the separator, in this instance, is considered to act as the spring as in the present invention and argued by the applicants in the amendment accompanying the RCE at page 9, 2nd full paragraph* ***(emphasis added)***.

Regarding claim 41:

Pauling reveals that the battery system 1 is substantially surrounded and enclosed by an electrolyte space 3 which is filled with an electrolyte 4; the electrolyte space 3 can be constructed as a completely closed container and the electrolyte space 3 receives two electrodes 2a and 2b, in such a way that they are substantially completely wetted by the electrolyte 4 (COL 7, lines 64 to COL 8, line 5). *In this case, given that the electrolyte space is constructed as a container which encloses the electrolyte in the electrolyte space receiving the electrodes, thus, the container itself directly applies pressure (the pressure of holding the electrolyte) to the electrolyte which then directly applies the pressure the separator/electrode structure. Thus, the container indirectly applies pressure to the separator/electrode structure as the container mechanically stabilizes the complete electrolyte and separator/electrode structure.*

Regarding claims 42-44:

Pauling discloses the separator material can be made from polyethylene and polypropylene (COL 27-33). *It is noted Pauling uses the same separator material as instantly claimed, thus, the separator material must exhibit the specific swelling and impermeability properties.*

Regarding claim 45:

Pauling teaches the separator prevent dendrite formation during recharging (COL 6, lines 27-35/ CLAIM 8).

Consequently, the claims are anticipated.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 29 and 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pauling 6207316 as applied to claim 28 above, and further in view of Devitt et al 3669746.

Pauling is applied, argued and incorporated herein for the reasons above. Nevertheless, Pauling does not expressly disclose the specific substrate material, wound electrode and the woven separator.

As to claims 29 and 37:

Devitt et al disclose a secondary alkaline battery having a zinc-containing electrode (TITLE/ COL 1, lines 35-40) including silver/zinc alkaline cells (COL 1, lines 42-47). Devitt et al discuss the importance of applying a certain pressure to the stack of electrodes through the separator layers (COL 2, lines 9-12), the intimate pressure engagement between the electrode and the separator (COL 2, lines 69 to COL 3, lines 3) and the pressure stacking of the electrodes (COL 4, lines 22-27).

In particular, Devitt et al disclose the use of flexible electrode plate capable of being spirally wound which may be a flat-grid structure such as woven wire screen or perforated sheet metal or expanded mesh (COL 4, lines 19-23 and lines 29-35).

As to claim 35:

Devitt et al illustrate spirally wound battery cell (FIGURE 1-2/ COL 40-42/ COL 4, lines 20-22)

As to claim 36:

Devitt et al disclose the use of woven fabric separators such as cellophane (COL 1, lines 70-73/ COL 5, lines 69-72)

In view of the above, it would have been obvious to one skilled in the art at the time the invention was made to use the specific substrate material of Devitt et al in the rechargeable battery of Pauling as Devitt et al disclose that such specific substrate material provides a long lasting base onto which the active material remains firmly in electrical contact, electrochemically active and reversible throughout the life of the battery.

With respect to the wound electrode, it would have been obvious to one skilled in the art at the time the invention was made to use the specific wound electrode of Devitt et al in the rechargeable battery of Pauling as Devitt et al disclose that the battery cell and the electrode per se are otherwise made to accept a desired configuration and to allow pressure stacking with relation to the rest of the cell contents as confined within the finished cell. Thus, the spirally (helically) wound arrangement of the battery cell and the electrode permits to better pressure stacking the cell.

With respect to the woven separator, it would have been obvious to one skilled in the art at the time the invention was made to use the specific woven separator of Devitt et al in the rechargeable battery of Pauling as Devitt et al disclose that the woven separator is a homogeneous and uniform structure having highly absorbing and retentive of electrolyte and provides a uniformly wetted interface with the electrochemically active material.

9. Claims 29-30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pauling 6207316 as applied to claim 28 above, and further in view of Dews et al 3912538.

Pauling is applied, argued and incorporated herein for the reasons above. Nevertheless, the preceding prior art does not expressly disclose the specific fabric thickness.

Dews et al disclose a carbon fiber substrate for use as an electrode (ABSTRACT) wherein the carbon fiber has a fiber thickness of 6-8 microns (COL 2, lines 55-62). In particular, Dews et al discuss that the electrode is particularly adapted for use with alkaline cells (***emphasis added***) (COL 4, lines 2-7).

In view of the above, it would have been obvious to one skilled in the art at the time the invention was made to use the specific fabric thickness of Dews et al in the rechargeable battery of Pauling as Dews et al discloses that electrodes made from such fabric having the specific thickness have good chemical stability and electrical conductivity, permits excellent control of the reaction interface of the electrode providing a relatively inexpensive electrode.

10. Claims 32-33 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pauling 6207316 as applied to claim 28 above, and further in view of Ruetschi 4192914.

Pauling is applied, argued and incorporated herein for the reasons above. Nevertheless, Pauling does not expressly disclose the specific electrode thickness, particle size and carbon active material.

As to claims 32:

Ruetschi makes known an alkaline battery comprising Ag-Zn electrochemical system (COL 5, lines 44-46/ COL 1, lines 4-10) wherein the electrode is from 0.1 to 2 mm thick (COL 3, lines 20-25).

Regarding claim 33:

It is disclosed that the average grain size of the particulate is 2.6 to 3.4 micron (EXAMPLE 1/ COL 4, lines 35-40).

Regarding claim 46:

Ruetschi reveals that carbon black can be use as an active material additive (COL 3, lines 9-15).

In view of the above, it would have been obvious to one skilled in the art at the time the invention was made to use the specific electrode thickness of Ruetschi in the rechargeable battery of Pauling as Ruetschi discloses that such electrode thickness is suitable for providing an electrically conductive electrode structured adapted to the battery utilization.

With respect to the particle size, it would have been obvious to one skilled in the art at the time the invention was made to use the specific particle size of Ruetschi in the rechargeable battery of Pauling as Ruetschi discloses that such specific particle size of the electrochemical active material provides improved charge/discharge characteristics.

With respect to the carbon active material, it would have been obvious to one skilled in the art at the time the invention was made to use the specific carbon active material of Ruetschi in the rechargeable battery of Pauling as Ruetschi discloses carbon material is used as an additive in the active material to impede the diffusion of the silver material.

11. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pauling 6207316 as applied to claim 28 above, and further in view of Ferrando 5045349.

Pauling is applied, argued and incorporated herein for the reasons above. Nevertheless, Pauling does not expressly disclose the specific metal-coated graphite fiber substrate.

Ferrando teaches an alkaline secondary battery (TITLE) comprising a silver-nickel particle coated graphite fiber (ABSTRACT/ COL 1, lines 52-55/ COL 1, lines 65-68).

In view of the above, it would have been obvious to one skilled in the art at the time the invention was made to sue the specific metal coated graphite fiber substrate of Ferrando in the

battery of Pauling as Ferrando disclose that such specific coating provides an electrode which operates at near silver voltages while being lighter weight and using less costly materials.

12. Claims 38-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pauling 6207316 as applied to claim 28 above, and further in view of Ferrando 5283138.

Pauling is applied, argued and incorporated herein for the reasons above. Nevertheless, Pauling does not expressly disclose the specific metal-coated graphite fiber substrate.

Ferrando'138 teaches an alkaline secondary battery (COL 5, lines 4-6) comprising a metal-coated graphite fiber of the current collector/support grid (ABSTRACT/ COL 2, lines 44-50/ COL 2, line 67 to COL 3, lines 2). It is disclosed that the copper coated thin layer has a thickness of 10 micron (COL 3, lines 43-49).

In view of the above, it would have been obvious to one skilled in the art at the time the invention was made to sue the specific metal coated graphite fiber substrate of Ferrando'138 in the battery of Pauling as Ferrando'138 disclose that such specific coating provides a light weight electrode with enhanced characteristics for supporting active material and providing electrical conductivity.

13. Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pauling 6207316 in view of Ferrando 5045349 as applied to claim 38 above, and further in view of Mansfield Jr et al 5306580

Pauling and Ferrando'349 are applied, argued and incorporated herein for the reasons above. Nevertheless, the preceding prior art does not expressly disclose the specific metal coating material.

Mansfield Jr et al disclose an electrochemical cell (TITLE) wherein the alkaline battery uses a zinc anode and a silver-based cathode (COL 1, lines 31-45) and wherein an electrically conductive substrate is coated by with a metal selected from at least indium and lead and said coated substrate contacts the electrode material (COL 2, lines 53-62/ CLAIM 1). Mansfield Jr et al is directed to alkaline cells with a Zinc-containing electrode (COL 2, lines 42-48).

In view of the above, it would have been obvious to one skilled in the art at the time the invention was made to sue the specific metal coating material of Mansfield Jr et al in the battery of both Pauling and Ferrando'349 as Mansfield Jr et al teach that such specific coating material are capable of reducing gas generation at the interior surface of the anode cup without interfering with the chemical reactions that enable the cell to produce an electrical current.

Response to Arguments

14. Applicant's arguments with respect to claims 28-46 have been considered but are moot in view of the new ground(s) of rejection.

15. Applicant's declaration and related support documentation (including test results) submitted along with the abovementioned amendment were considered in their entirety.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Alejandro whose telephone number is (571) 272-1282. The examiner can normally be reached on Monday-Thursday (8:00 am - 6:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Raymond Alejandro
Primary Examiner
Art Unit 1745

